

COOP'S TECHNOLOGY DIGEST

-A Timely Report On The World Of Communications-

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THE MATTER OF HILL/MOUNTAIN TOP TRANSMISSION SITES

Intra-New Zealand communication links are provided largely by Telecom or BCL. Telecom owns virtually all of the domestic telephone/data network cabling in place while in terms of 'route miles' it would appear that BCL owns the majority of the point-to-point link facilities. Telecom is a public held company largely owned by foreign communication firms. BCL is an operating subsidiary of State Owned Enterprise Television New Zealand. Telecom is subject to regular public review of its operating activities, practices and charges; BCL is largely outside of public supervision.

New Zealand Auditor-General Jeff Chapman is responsible to Parliament to deliver annual reports of government departments and Crown (owned) entities. In the case of government departments he is also charged with evaluating each agency's resources and the effective use of same. In the case of SOEs, Chapman is unable to evaluate either resources or efficiency of operations. In his most recent annual report he wrote:

"The practical effect of the situation is that although Parliament has appointed its auditor to act in its interests, Parliament has also, by the terms of its appointment, precluded itself from receiving in respect of SOEs the benefits of reports on the full range of matters that the Audit Office can ordinarily provide.

"Furthermore, even though SOEs have to provide performance information additional to that included in the annual financial statements, the information is not subject to audit because it is not included in those statements.

"This is in contrast to the position applying to Government departments and Crown entities. In my view this is hardly what Parliament or the public expect of the Auditor-General. If he is so restricted, there seems little point in having the Auditor-General involved in the audit of SOEs at all. In my view the current 'halfway house' should not be allowed to continue because it gives Parliament false security as to the nature of the audit."

Chapman, like the Ombudsman, is responsible to the body Parliament and not the Cabinet directly.

WHAT IS A TRANSMISSION SITE?

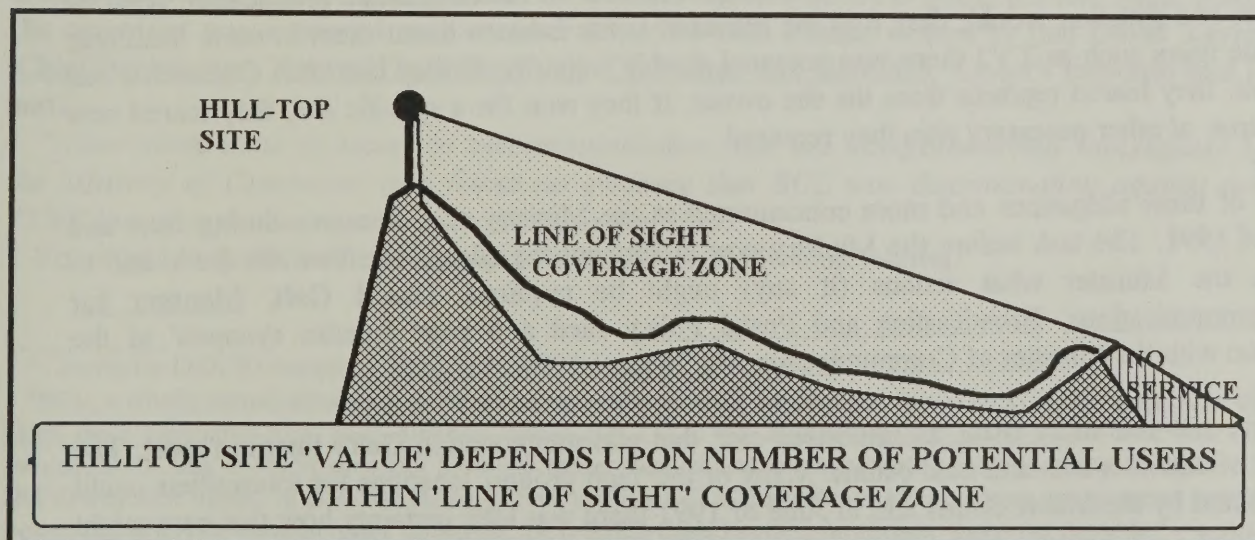
It is the nature of VHF/UHF and microwave energy that it travels best, serves best, when the pathway from the transmitter location to the receiving location is uncluttered by obstacles. This is called 'line of sight' propagation. At VHF (bands I and III, television and band II, FM broadcasting) small hills and foliage present modest obstacles to coverage if the area so shielded from direct reception falls inside of the geographic region that would be considered 'line of sight' were it not for the local blockage. In other words, if a transmitter's elevated location allows theoretical 'line of sight coverage' for a distance of 70 kilometres, and a hill or series of hills at the 40 kilometre point blocks 'line of sight' to the actual transmitter, band I, II and III signals generally will fill in behind these hills with a usable (if not strong) amount of signal. This becomes less true at UHF (TV bands IV and V) and is usually not true at frequencies above 2,000 MHz.

Elevated transmitter locations that offer line of sight reach to areas of densely concentrated users (i.e., population) have value. The value of each site is in direct proportion to the number of potential 'users' of transmissions that could originate at the site. In terms of people-coverage, the Auckland area Waitarua site is the most valuable piece of transmission real estate in New Zealand.

But site preparation is seldom related to its commercial value. Some sites (such as Sugarloaf serving Christchurch) were moderately accessible before the first broadcast transmitter was located there. Others, such as Hikurangi in Northland were virtually inaccessible and required significant roading and power line installation costs before the first broadcast transmitters could be sited. It is a usually dependable rule of thumb that sites that serve the fewest number of users will also cost the most to develop. If sites were developed for purely commercial reasons, access to locations such as Northland's Hikurangi would be far more expensive to the user than sites such as Sugarloaf or Waitarua.

With the creation of State Owned Enterprise status for Television New Zealand, it's BCL subsidiary gained the opportunity to function as a bottom-line (profit centred) business. This in turn caused BCL to relook at what its various sites (more than 500 nation-wide) had originally cost, how much they cost to maintain, and what return/profit (if any) could be expected from each site.

It is this accounting which the Auditor-General is not allowed to inspect.



CONCERNS REGARDING SITE CHARGES

In 1991 the Ministry of Commerce, acting in response to a request from the Minister of Communications, launched a study of 'Access to Communications Sites.' The cause of this study was a number of complaints lodged with the Minister concerning (a) charges for sites, and, (b) ultimate access to sites controlled by BCL, Telecom and a handful of private site operators.

Allegations from existing and potential site users included (but were not limited to) the following:

1) In 1991, FM broadcasting was quite new and many would-be FM broadcasters were not pleased with the terms, conditions or charges they were being quoted for transmission sites already in operation.

2) In 1991, TV3 was also in its first growth stage and the third television network had similar concerns.

3) Although there appeared to be no significant deterrents that would stop a new FM broadcaster or TV3 (or anyone else) from creating and developing their own site in lieu of renting site space from an existing site operator, there were allegations that some site operators were discouraging local (planning) authorities from approving alternative sites as a way of ensuring that their existing sites were the only sites available.

4) Would-be site users complained that existing site operators would not unbundle site use charges from site+transmitter+tower+antenna+housing charges. In effect, it was alleged, new site occupants were being told they could only rent site space if they also agreed to rent a transmitter and all of the attachments from the site operator.

5) Some would-be site users were being told that agreement to use the sites at the terms offered by the site operator was not enough; the new renters must also agree to allowing the site owner to provide interconnection facilities as well. As a practical matter, an FM broadcaster who might agree to the terms for say, Sugarloaf, was then being told he must agree to allow the site operator (BCL) to also 'trunk' his signal from either the broadcaster's studio or a designated point in Christchurch to Sugarloaf; he could not provide his own studio to Sugarloaf interconnect.

6) Although there appeared to be legal avenues a disgruntled would-be site user might take, through the provisions of the Commerce Act, few potential site users felt this remedy was in fact an option. They alleged that by bringing such a case under the Commerce Act they were being forced to pay the costs of proving that a site owner's requirements were not reasonable. Furthermore, should the suit actually be decided in favour of the disgruntled broadcaster, what he won in one situation would, they told the Minister, come back to haunt them in other locations. For site users such as TV3 there was potential double jeopardy. If they lost such Commerce Act appeals, they feared reprisals from the site owner. If they won for a specific site, they feared new problems at other necessary sites they required.

All of these allegations and more concentrated in the Ministry of Commerce during June and July of 1991. The task before the Ministry was to sort out the allegations from the facts, and to advise the Minister what actions (if any) might be required. David Galt, Manager for Telecommunications, Broadcasting and Postal Policy filed a 5 page 'interim synopsis' of the situation with the Minister of Communications on 26 June 1991.

There was one more issue, an important one, that was mentioned in Galt's interim report. The matter of Maori Assets and land claims. Many of the 'high ground' locations for transmitters could be affected by the Maori claims and in June of 1991 there was little certainty how that case might be decided.

SECOND INTERIM REPORT

On 30 September 1991 David Galt filed a 9 page summary with the Minister of Communications. In the July-September interim detailed responses had been received to questionnaires, prepared by Galt and his staff, from BCL, Telecom, Radio New Zealand and other site proprietors and site users. In his summary Galt wrote:

"5 Any intending user of high sites requires the following services:

- i access, which requires that the site and its access road be developed;*
- ii a tower or other transmission facility and associated facilities;*
- iii a power supply;*
- iv maintenance; and*
- v security."*

Galt went on to note "BCL controls roughly 500 sites (and) owns most of the high sites which are currently being used for television broadcasting (and) many of these sites are also used for FM broadcasting. BCL provides a full service for television and FM radio operators, including transmission equipment, maintenance and programme linking between a client's studio and the site."

About Telecom Galt wrote "(Telecom) has more sites overall than BCL (for) land mobile repeaters, cellular radio, nation-wide paging and microwave linking. (But) many are also suitable for television and FM broadcasting services. With regards to hilltop sites, Telecom does not see itself as a provider of services per se. Rather it considers that its role is to facilitate site access and provide shared accommodation, road access, power and antenna/tower space."

About the 1991 situation as he saw it Galt wrote "With a small number of companies dominating the market there is obviously scope for monopolistic behaviour. This report considers the evidence of such behaviour, and suggests possible remedies for such behaviour where it exists."

ACCESS TO BCL SITES

Far more recent than the 1991 reports now being reviewed, Regional Television Trust Chairman John Howard filed a complaint (January 1993; *) with the Commerce Commission alleging that BCL had overpriced to his group charges for television equipment and a transmission site required to launch a public television channel for the Waikato region (see CTD 9401, p.3 and 9402, p.40). His complaint was answered on December 13, 1993 with a letter written by one David Taylor (Chief Investigator, Network Industries Unit, Commerce Act Division). Taylor's response said in part:

"...the whole issue of access to telecommunication sites was comprehensively investigated by the Ministry of Commerce who found no evidence that BCL was discriminating against non TVNZ broadcasters as regards to its transmission sites."

You might keep this written response in mind as you study what follows.

* / Howard's 15/01/93 complaint addressed to Taylor said in part:

"BCL, a wholly owned subsidiary of TVNZ has quoted a price for a transmitter that is NZ\$142,000 dearer than the exact same transmitter from NEC Australia landed cost....BCL also quotes \$480,000 per annum to look after our transmissions...this is (approximately) \$300,000 dearer than (other) countries with similar terrain and logistics ... (RTV) therefore wanted to purchase the equipment and use BCL's transmission site on a lease arrangement, pay for power and enter into a maintenance agreement. BCL staffer Chris Lambourne advised this is not possible."

Returning to September 1991, Galt wrote to the Minister:

"Some site users alleged BCL controls site access in a way which benefits the company and its owner, Television New Zealand Limited. It was claimed BCL extracts monopoly rentals and has delayed consideration of site access applications from potential or actual competitors in an effort to restrict competition.

"Telecom, for example, said that it had been unable to win some competitive tenders in respect of linking services because BCL had denied access to its sites. Another major site user criticised BCL's insistence on long-term contracts (where typically a five year or longer period is the norm). BCL's practice of offering discounts to companies which use other BCL services such as installation and maintenance was also cited as being anti-competitive.

"In a report prepared for the Ministry of Commerce, a firm of radio engineers argued that BCL's commitments to organisations such as Clear Communications have led it to refuse other commercial telecommunication organisations permissions to use sites or run links through BCL sites.

"The basic mechanism which BCL has used to refuse such access at the key sites of Waiatarua (Auckland), Te Aroha (Hamilton), Wharite (Palmerston North), Kaukau (Wellington) and Sugarloaf (Christchurch) has been its 'point of interconnect' policy. BCL requires clients wishing to use these sites to link at 'the point of interconnect', a BCL site which is often remote from the transmission site itself. This policy, several site users alleged, is explicitly anti-competitive."

In response to these allegations BCL's position was summarised by Galt as follows:

"BCL argued that its point of interconnect policy ensured that all clients face similar terms and conditions for access to BCL sites. It also stated that there was complete neutrality in all of its dealings with clients.

"On the primary issue of whether it was a monopoly at all, BCL claimed to officials that there are adequate alternatives to all of its more significant sites. The report by a private firm of radio engineers (previously cited) contradicts this claim. In the view of the authors of that report, BCL has 'a near monopoly (of sites) in the major metropolitan areas', and the alternatives to existing sites indicated by BCL are misleading because restrictions imposed by local authorities, coupled with environmental concerns, would make it difficult to develop such alternatives in many cases.

"Officials (i.e., the Ministry) have been unable to make a definitive statement on this issue because BCL has declined to supply information on prices and conditions of access in respect of its sites. What is certain, however, is that we have been unable too disprove or even seriously challenge the contention that some of BCL's policies and practices are anti-competitive in character."

So it would appear that not only is the Auditor-General prevented from inspecting the financial dealings of BCL, but the Ministry of Commerce is also prevented from studying the legal contractual requirements of BCL as well.

The Trust's John Howard also alleges that BCL, while controlling access to the Te Aroha (Hamilton) site, does not own the site. Howard claims to have documents showing the true owner of the site is in fact another agency of government. His attempts to force disclosure of the written agreements between that agency and BCL were fruitless and he makes the point that if a site such as Te Aroha is actually owned by an agency of government (for example, the Department of Conservation owns many such sites), that if BCL is creating a profit for its own operations from

that property, are the people of New Zealand at large losing government revenues to an SOE when those revenues more appropriately should be going to the government?

Most BCL sites were developed by Television New Zealand under an earlier regime. At the time TVNZ activities were indistinguishable from other government activities. Many BCL sites are believed, says Howard, to be 'peppercorn leases' arranged at a time when BCL was neither profit making nor part of an SOE. Under its present profit centre operation, funds going to BCL by broadcasters who are, perhaps, competitive to TVNZ for sites which BCL does not actually hold legal title to are suspect. Or so Howard believes.

ACCESS TO TELECOM SITES

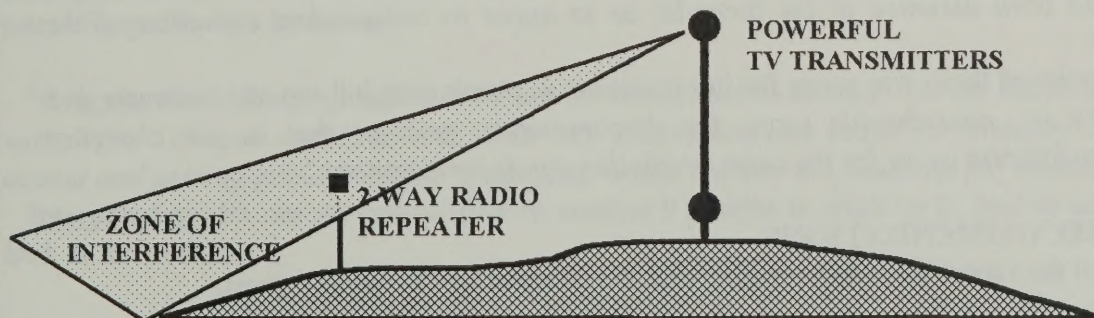
Although most of the allegations from disgruntled broadcasters or would-be broadcasters cited BCL, Telecom did not escape notice in the study. For the most part, Telecom sites are loaded with two-way communications equipment and experience has shown that while it is possible to collocate a number of separate TV (plus FM) broadcast transmitters on the same hill/mountain top, two-way radio sites present special problems. Broadcast sites are largely transmit oriented while two-way sites are more critically dependent upon reception from points to the site than broadcasting from the site. A TV or FM transmitter generates so much 'garbage' (out of band low level signals) that the proximity of such transmitters greatly reduces the usefulness of the site for two-way radio applications. For this reason Telecom, primarily an operator of two-way equipment, has largely avoided TV and FM transmission users for its sites.

TV3 found Telecom's restrictions at the Kopukairua (Bay of Plenty) site "*restrictive*." TV3 was allowed onto the site region but was told by Telecom it could not sublet space to other users. TV3 told the Ministry it considered Telecom's policy anti-competitive. TV3 wanted onto the Telecom site there, however, because earlier attempts to deal with BCL for its nearby site had failed; a point we shall return to.

OTHER SITE RESTRICTIONS

Site developers, faced with terms they consider unreasonable from BCL (or Telecom) are generally told they have the option of developing their own (private) site. The economics of this are sometimes attractive on the surface; less so once the real work of obtaining approvals begins.

CO-SITING TV/FM BROADCAST TRANSMITTERS WITH 2-WAY RADIO REPEATERS IS HAZARDOUS: locally super-strong TV/FM signals create 'false signal' interference problems for repeater/relay receiving equipment.



In 1991, the era of the report now being discussed, local and regional authorities were beginning to develop arguments against the development of hilltop sites for broadcasting and repeaters. More recently the quite substantial Resource Management Act (which went into effect in October of 1991) has made such projects even less feasible.

Galt wrote *"The Wellington Regional Council in a discussion paper released earlier this year (i.e., 1991) has referred to the 'costs, both for the environment and for the efficient and effective operation of the facilities', of the proliferation of telecommunication sites in the Wellington region.*

"The report notes that there are roughly 660 such sites in the area with co-siting taking place in only 10 percent of all sites, and proposes establishment of a policy to 'encourage' co-siting. Under this policy, where those proposing to establish a new site claim that co-siting is not appropriate the applicant would be required to produce the evidence of an independent advisor in support of this contention, and, an environmental impact report. The effect of such policies could be to delay considerably the development of alternative sites and thereby reduce the scope for effective competition."

The local authority gauntlet was perhaps made more complicated by pressures from existing site operators. TV3, in attempting to establish a site at Bay of Plenty partially in concert with Telecom, found BCL to be vindictive. Of this incident Galt reported:

"TV3 argued that BCL's appeal against its application for town planning approval for a site at Kopukairua was anti-competitive in content. TV3 claimed that BCL had advised it would agree to withdraw its appeal if TV3 agreed not to proceed with establishment of its own site and agreed instead to site with BCL."

This allegation was perhaps reflective of The Ministry's concern that *"(in our study) We have been unable to disprove or even seriously challenge the contention that some of BCL's policies and practices are anti-competitive in character."*

THE QUESTION OF PRICING

Ultimately, any potential user of an existing site would find few things to complain about if the pricing was considered 'fair.' Establishing a fair price is difficult in this area since for the most part there are only BCL sites in the broadcasting field and only Telecom sites in the two-way communications field on a national level. The Ministry attempted to extract from BCL details of its pricing but found detail missing. BCL, it was alleged, *"refused to make publicly available the asset values against which its pricing formula is based, or provide the internal rate of return on capital which had been assumed in the formula, or to agree to independent valuation of the assets involved."*

The Ministry believed there was room for improvement in monitoring hill top site contracts and suggested *"(t)here is considerable scope for discriminatory pricing; that is, for charging different prices to different users for the same or similar goods and services."*

PHASE TWO RECOMMENDATIONS

Galt summarised the report by recommending that the Minister of Communications:

"i note that restrictions on access to transmission sites and pricing policies for access to such sites suggest that site proprietors are exploiting monopolies or near monopolies in a limited number of instances in some areas in an effort to restrict competition and to charge unreasonably high and/or discriminatory prices;"

Interpretation: The Ministry believed there had been situations where site operators had over charged, or implemented policies designed to make it unprofitable or physically impossible for site users to negotiate use of a desired site.

"ii note that, while the Commerce Act provides remedies which are adequate in principle, smaller commercial site users and most non commercial users have few effective remedies in such situations because of the disadvantages noted;"

Interpretation: While the Commerce Act provides a system where site owners could be taken to court and charged, the procedure (the Ministry believed) is cumbersome and expensive; only the larger firms can afford to bring such a suit.

"iii note the major site users have been reluctant to resort to use of the remedies provided by the Commerce Act, possibly because of concerns about the impact on all users and owners of a general review of behaviour in this market;"

Interpretation: Larger firms (such as Telecom which used the proceedings to attack BCL at every opportunity) who live in glass houses had best not start throwing stones.

"iv note that, in the view of the officials, ownership of BCL by TVNZ is not a significant factor in determining access and pricing policies, and that none of the reasons which have been advanced for separating BCL from TVNZ on competition policy ground have been sufficiently persuasive to warrant a recommendation on this point;"

Interpretation: Telecom in particular sought a ruling which would force TVNZ to divest BCL believing that BCL's corporate relationship with TVNZ worked to the detriment of competitors. With TVNZ investing heavily in Clear Communications, Telecom perceived TVNZ as a competitor and believed there would be fairer access to sites if BCL was not answerable to TVNZ. The Ministry did not buy this reasoning.

"v note that regulation compelling site owners to grant relatively unrestricted access to site users and/or disclosure regulations focusing on prices and access conditions might reduce the scope for anti-competitive behaviour in the communication site market; and"

Interpretation: There might be fewer claims of excess charges or refusals to make sites available if there were some (Ministry created) 'rules' that levelled the playing field, forcing site operators to deny permission to access to sites only under very unusual circumstances and making public the rates charged by site operators.

"vi agree that (Ministry) officials should be authorised to discuss - on the basis of this report - with BCL, Telecom and RNZ and other site proprietors the scope for industry agreement on access and pricing policies which, if adopted, would remove the necessity for regulation...."

Interpretation: It's not yet settled; give us another 9 months to work on it. And so ended the 1991 look at the problem.

PHASE THREE - REVIEW

Fifteen months later, on December 21, 1992, Hunter Donaldson, General Manager for Communications at The Ministry of Commerce updated Minister Maurice Williamson with an 18 page document. Many of these 18 pages were spent reviewing the allegations, claims and counterclaims cited in the two previous documents (**). But late 1992 the situation seemed to have changed and Donaldson would suggest several theories as to why it changed in the intervening year (plus) before completing his report.

Anti-Competitive Practices

Although David Galt seemed quite certain there had been instances of anti-competitive practices, Donaldson's conclusions after reviewing the same material are not so conclusive. He wrote:

"For the suggestion that BCL, Telecom and/or any other site-proprietor are or have been behaving in an anti-competitive manner to make any sense at all, it must be capable of demonstration that these organisations exercise control over key transmission sites (what Telecom calls 'Strategic hilltop sites'). Whether this is true is disputed by site proprietors, all of whom claim that alternatives can be found (or can be developed) for each of their sites. In some cases, however, it is admitted that the best alternative is for one reason or another inferior to the preferred site."

One of the contentions concerning BCL's control of sites involves history; that BCL came by its sites for little or no direct expense, that sites came largely from government land holdings, that sites were developed out of budgets in the 60's and 70's when cross subsidisation was the rule. Those who are suspicious of BCL, like John Howard, believe that BCL denies access to its books in large part because site costs carried on the books would show the SOE has very few of its own dollars actually invested in the sites.

The principal complainer about BCL's control of sites through the proceeding was Telecom. In answering Telecom, BCL employed a bit of strategy. It wrote the Ministry:

"...like Telecom, BCL has inherited certain rights to sites and co-siting arrangements by virtual of the historical fact of broadcasting regulation, former Broadcasting Tribunal decisions or recommendations and the hitherto much higher degree of state ownership in broadcasting and telecommunication markets..."

In other words, 'Mr. Telecom: Don't accuse us of finding our sites in a cereal box unless you are willing and able to explain how you got your sites as well.' In fact, Telecom sites were developed in the same two decades (1960's/70's) using similar state operating principals. People who live in glass houses

A second complainer to the Ministry, a private firm of radio engineers, argued that "BCL has a near monopoly (of sites) in the major metropolitan areas and alternative sites suggested by BCL are misleading because of restrictions imposed by local authorities."

BCL's response, according to Donaldson, was "to reject this view." BCL also suggested that terrestrial sites such as Waiatarua were at best 'temporary,' by noting:

**/ CTD obtained three documents from the Ministry of Commerce under Official Information Act: 26/06/91 and 30/09/91 letters from David Galt to Minister of Communications; 21/12/92 letter from Hunter Donaldson to the Minister. Additional documents studied come from files of John Howard and two private broadcast industry sources.

"...new means of distribution involving cable (for television), satellites and wireless technologies will provide alternative and competing solutions to broadcasting and telecommunication needs."

Donaldson provided a clue to his own impartiality on this issue when he agreed with the above statement and wrote *"As BCL correctly argues... (and the above statement)."* He went on to move the Minister of Commerce out of the 'loop' on this touchy, unresolved issue by writing:

"Whether ownership of certain sites results in dominance is an issue which could be established by the courts..." going on to add *"This is not to say that complaints about cost of access to transmission sites have ceased. The fact that such complaints continue to be made from time to time does not of itself warrant Ministerial intervention in our view, however."*

Access To Sites

Galt in his 30 September 1991 report to the Minister listed 8 areas of concern touching on costs, prices, terms, conditions, and access. The fourth item Galt listed was access.

Donaldson saw the importance of access with a different degree of importance and wrote:

"The key issue we have examined over the past 14 months has been conditions of access to sites. Some site users have claimed that BCL controls site access in a way which unfairly benefits the company and its owner, TVNZ."

"The main complainant against BCL has been Telecom. (Allegations) made against BCL include the following:

- a that it insists on unreasonably long terms in its contracts;*
- b that it 'bundles' services, offering discounts to companies which use other BCL services (such as installation and maintenance), a practice which is alleged to be anti-competitive in effect; and*
- c that its commitments to Clear Communications Ltd and others have led it to refuse to give other commercial telecommunications organisations permission to use its sites or to run links through BCL sites."*

"Each allegation was denied by BCL."

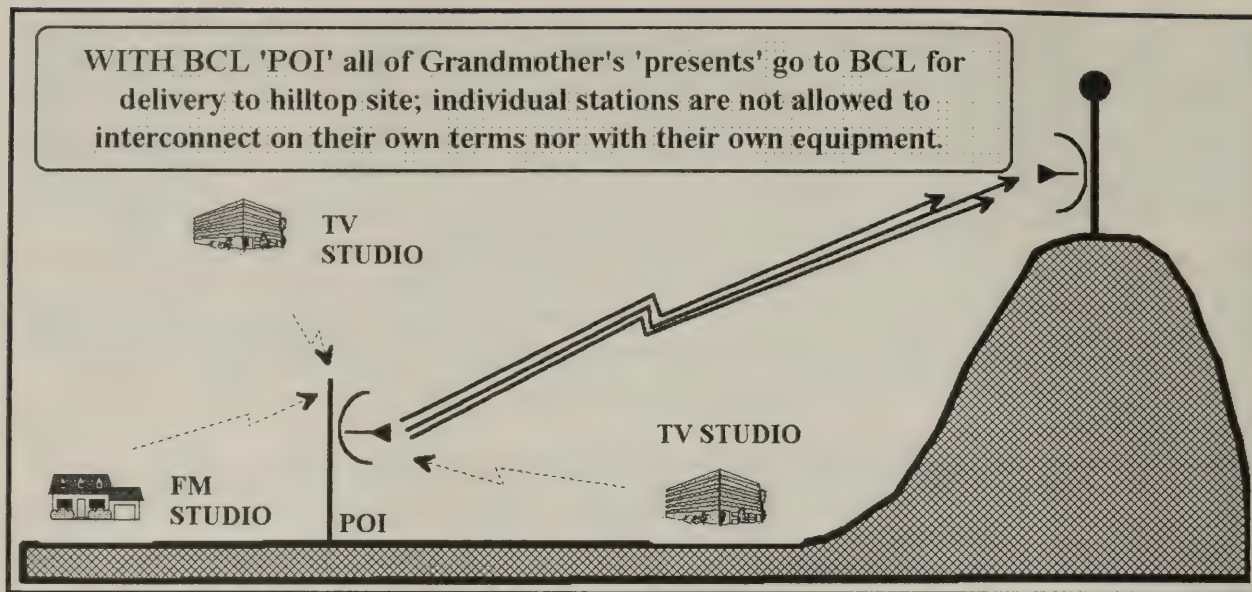
To counter these charges BCL apparently provided the Ministry with what it termed "(extracts from) ..a fairly typical contract." Whether the Ministry had the option of selecting a contract for study was not reported. After wading through the contract extracts supplied by BCL for study Donaldson wrote:

"In attempting to evaluate Telecom's claims (alleging impropriety on the part of BCL) we were ... dependent primarily on (our own) value judgements and/or assessments and we are sceptical about whether (such judgements) would have any value if we could make them."

Interpretation: BCL's contract (extracts) supplied for study did not convince Donaldson that the Ministry was getting sufficient facts to really understand what was happening; if he had to form a judgement based upon what he saw and understood, he was not comfortable how accurate his judgement would be. So there would be no judgement on the merits of the 'typical contract' presented for study.

Point Of Interconnect

Still in the 'access to sites' general heading, Donaldson noted that *"Telecom's strongest criticism of BCL relates to the latter's point of interconnect (POI) policy. This is the basic mechanism by BCL which controls access to key sites such as Waiatarua (Auckland), Te Aroha (Hamilton),*



Wharite (Palmerston North), Kaukau (Wellington) and Sugarloaf (Christchurch). Clients wishing to use these sites are required to link at the POI, a site which is often remote from the transmission site itself."

A POI. Consider yourself carrying a package to your grandmother at Christmas. You select a present, wrap it, and place it into your car. Then you head for grandmother's house. Only along the way you are told that you cannot deliver the package personally; instead, you must take it to a central collection point where all of the presents for grandmother are being assembled. There somebody else will take the present from you promising to deliver it to your grandmother.

The broadcaster is the chap with the present for grandmother. BCL is the group that operates the central collection point as well as the truck that will ultimately haul the assembled presents to grandmother. Only the truck is so large that to make it worthwhile taking the presents to grandmother, it will also carry presents for other people living near her. So when the presents are finally delivered, the truck supplies several unrelated people with their presents.

Now take it a step further. BCL supplies and maintains the transmitter for you on say, Sugarloaf. Their staff operates it, adjusts it, and you send them a cheque each month for their work. Your staff never goes to Sugarloaf, never really knows which equipment on Sugarloaf is dedicated to your station, or how many other stations are sending Christmas packages to Sugarloaf in the same BCL truck. BCL charges you for this packaged service; you are never quite certain how it all works or what equipment is involved.

The POI is the initial depot 'downtown' where you delivered grandmother's package. From that point onward you have lost control of the package. And the last step. Someone rules that only the BCL truck can take packages to grandmother. Now you not only turn your package over to a downtown depot but you can't go to visit grandmother in person.

That's POI. Telecom thinks that POI is a clever way for BCL to hide real costs and to charge what they wish since the POI system is not open to inspection. And Telecom (as well as many broadcasters) object to POI.

BCL disagrees. They told Donaldson:

"...our policy is fair and equitable for all users. Firstly, the policy recognises that network broadcasters need access to a network provider to carry their signals north and south in order to link up and down the country. The best locations for interconnecting with the network providers are located in the central business districts of cities (and generally within close proximity to the network broadcaster studio location).

"Our POI policy therefore proposes that this interconnection point be established as a POI and that we carry the network broadcaster's signal from the POI to our transmission site using a shared link. This configuration suits the needs of the network broadcasters ideally and in most cases will be the most cost effective arrangement.

"By limiting the number of access links to our sites for network broadcasters by the use of shared POI-to-site link we are better able to cope with a number of separate direct links..."

In answer to this and other BCL position statements Telecom responded as follows:

"The provision of cost effective linking is in everyone's interests. However, surely it is up to the broadcaster to determine the most cost effective solution without having one hand tied behind its back. How can a broadcaster know it is getting the most cost effective solution when BCL is the only party entitled to direct site access and BCL itself has an interest in the outcome of the bidding process?"

Telecom was clearly not ready to agree to BCL's POI policy when it wished to negotiate for a BCL site. Telecom believed it was mature enough to deliver its own present to grandmother.

But, faced with non-use of BCL sites, Telecom did finally give in when its need for a BCL site was greater than its position against POI. Accordingly, BCL and Telecom agreed to a statement which carefully reflected the position of both; a condition to Telecom co-siting with BCL:

"BCL has an established POI policy. Without prejudice to each parties' respective rights Telecom acknowledges the existence of that policy. BCL acknowledges that should it seek to apply such a policy to Telecom it will do so only with respect to site access required for the transmission of television and/or radio broadcast services and only with respect to new uses and any additional site. BCL will apply the policy if it is required for the efficient use and management of a particular site. BCL undertakes that it will act reasonably and in good faith in applying such a policy."

Interpretation: BCL was willing, under pressure from the Ministry, to allow Telecom onto one or more specific BCL sites and would only apply the POI policy in situations where Telecom was going to link broadcast television or radio services to the site; two-way radio signals, for example, could go directly to the site without first going through the POI system. Telecom got use of a desirable site for two-way, BCL saved 'face' with the customer base it considered most important to its future: television and radio.

But is the issue resolved? BCL has subsequently agreed it might (not will) allow direct linking to a site in "*particular and unusual circumstances*" but at no place in their literature does it spell out what "*particular circumstances*" would be considered "*unusual*" enough for it to allow access directly to a site rather than through a POI.

Donaldson showed his frustration with the issue when he summarised:

"The competition consequences of POI are complex, and would require specific detailed investigation of the particular circumstances involved before an unequivocal statement on the issue could be made."

Interpretation: BCL is intransigent about POI and the Ministry moved them as far as they could without calling in experts who have the background to cut through the arguments and conditions BCL attaches to the POI position. The Ministry gave up, satisfied to have convinced BCL to at least agree with Telecom that for two-way radio they can share a site less the POI requirement.

Pricing Policies

What is a fair price for a site? How do you determine the 'site price alone' if the site owner insists on providing not only the site, but also the building to house your transmitter, the tower to hold your antenna, the transmission line to connect the two ... and the transmitter and antennas as well? Can you, in fact, separate out the site-alone price?

In one of those rare situations where Telecom was co-sited on a BCL site and Telecom (being Telecom) was providing at least its own transmitter and antenna, they found an example to cite in complaint. Telecom wrote:

"Following Corporatisation (when BCL became a part of an SOE), BCL sought to increase rentals on sites shared by Telecom by 150% (sic) (from \$300,000 per annum to \$837,000 per annum). In some individual cases, the increase ranged as high as 700%. Together with other co-siters, Telecom actively opposed such rental increases. BCL claimed the rentals were based upon industry standard formulae but have declined to release details ... In Telecom's case, a refusal to pay the increased rentals resulted in an ultimatum from BCL either to agree or face a denial of access to the sites. Given Telecom's reliance on the BCL sites and the implications for the integrity of Telecom's network, it had no choice but to pay the rentals on a without prejudice basis."

Donaldson also found 'elasticity' in BCL charge policies. He wrote:

"Several site-users stated that prices for access are negotiable in areas where there are alternative sites, or where alternative sites could be established at reasonable cost. Savings as much as 25-30% could be made in such cases, it was alleged."

Telecom was also criticised for its pricing policies. Both firms refuse to disclose how they arrive at pricing for sites and Telecom explained its policy in four words: *"Return on capital approach."* BCL responded in some detail but failed to explain how their pricing policy actually worked. BCL told Donaldson their pricing policy was based upon:

"a full depreciation of the asset over the life of the contract

b a pro-rata share of (a) depreciation of shared assets, (b) maintenance, (c) corporate overheads and the cost of capital, and (d) any other costs attributed to use of such assets; and (e) direct costs of maintenance service at standard charge-out rates."

Interpretation: BCL has so much internal flexibility on its charges that it can charge anything it wishes.

Donaldson agreed and in his summary for this area wrote:

"...there is a considerable scope for discriminatory pricing; that is, charging different prices to different users for the same or similar goods or services." He also noted, "The Ministry has found it impossible to assess the validity of specific allegations of overcharging because of the

lack of directly comparable prices for like services ... (and) we have insufficient data on which to make an assessment of the fairness or otherwise of the pricing policies of the major site-proprietors."

Interpretation: BCL won't show us site user contracts, refuses to show us how they arrive at site costs or expenses, and because BCL is the only firm in New Zealand providing a national chain of FM and television broadcasting sites, we have no comparable business with which to compare BCL charges. But we suspect there is discrimination being practiced.

It was, then, with some surprise that Donaldson next wrote:

"On balance, however, we see no grounds for Ministerial intervention because:

a no complaints on either this or the access issue have been made to the Commerce Commission and nor, to our knowledge, have any Commerce Act actions on this issue been taken in the High Court; and

b the evidence cited by those who have complained to us about prices (for example, instances where prices were reduced where use of an alternative site was contemplated) tended to support the view that the site market is becoming increasingly competitive."

Interpretation: If complainants are really brassed off, they can use the provisions of the Commerce Act and go to court; don't go to the Minister of Commerce.

Other Issues

Other issues raised in complaints included (a) the length of time it took BCL (and Telecom) to act on requests for site use, (b) the alleged misuse of the local and regional planning authorities by one site operator to slow down or stop a site applicant from creating his own, new, site, (c) the concerns voiced primarily by Telecom that BCL would function more 'fairly' if it was surgically removed from parent TVNZ and forced to operate either wholly on its own, or, as a 'club' (association of non-related members).

The Ministry found that between their first query in June of 1991 and December of 1992 the speed at which site requests were handled had dramatically improved. It took some of the credit for this change believing that site operators responded better to applications for site use because of the Ministry's "interest" in the matter.

In the matter of site operators intervening into planning councils the Ministry believed both BCL and Telecom had been guilty of this; often against one another apparently in a 'tit for tat' scenario where first one objected to a proposed new site by the other to which the other then objected to a new site by the first applicant. TV3 argued that BCL, when TV3 refused the terms of use for the Bay of Plenty BCL Kopukairua site, filed 'planning' objections to it developing its own site at Kopukairua. TV3 further claimed that BCL advised them that should they agree to use the BCL site, after all, BCL would drop its objections to the planning approval. BCL denied it acted anti-competitively in the Kopukairua appeal stating, *"Our only concern was that there should be no interference to our signals."*

If the Ministry's study of site conflicts accomplished little else, it did apparently force participants to clean up their acts. While neither BCL nor Telecom admitted they had practiced planning approval 'intrigue' previously, both subsequently provided Donaldson and the Ministry with *"written statements to the effect that attempts to obstruct proposals by other companies to establish new sites form no part of their (present) operations."*

Should BCL be separated from TVNZ? Here the Ministry came down quite without reservation. Donaldson wrote:

"In our view TVNZ's ownership of BCL has no measurable effect on the conditions governing or price access to BCL sites ... none of the evidence presented to us in favour of separating BCL from TVNZ is persuasive."

Some of the defensive arguments presented by (TVNZ/)BCL are of interest.

"While BCL's reliance on TVNZ as a client and in turn TVNZ's reliance on BCL for services are highly significant TVNZ would emphasise wider strategic issues as a rationale for a continued role in the control of BCL."

*"Industry analysis world-wide emphasises that convergence of the formerly separate telecommunications and broadcasting sectors is a trend for future operators in both areas. In recognising that TVNZ is in fact not a broadcasting business, but a company in the emerging electronic communication business, TVNZ has based its strategies for survival and growth on the synergism between TVNZ and BCL. For example, TVNZ used its wider international connections to bring together the partners to create Clear Communications, using the broadcasting assets of BCL to provide a distribution infrastructure for the new telecommunications company (***)*

"It offers benefits to all broadcasters in that the linkage between telecommunications and broadcasting gives NZ broadcasters who are clients of BCL potential access to new (largely telecommunications-driven) technologies, and the benefits of economies of scale."

Interpretation: TVNZ has a master plan. It involves the marriage of telephone, broadcasting, microwave, fibre optics and satellites. No, they will not disclose the plan to you because this is a competitive environment and if they were public with the plan, their competitive position might be at risk. "Trust us; we need BCL right where they are. Don't rock the boat," they seem to be saying.

THE COMMERCE ACT SOLUTION

"Section 36 of the Commerce Act prohibits firms with a dominant position in the market from using that position for purposes of restricting entry, deterring or preventing competitive conduct or eliminating a person from the market. Site users claimed that they had not resorted to use of the Commerce Act for various reasons." And so began Donaldson in his briefing paper summary to Minister Williamson. The conclusions Donaldson is now arriving at are increasingly pointing at use of the Commerce Act by aggrieved parties; in lieu of any action by the Ministry of Commerce. Donaldson then comes to a series of 'tests' for the seriousness of the issues raised by Telecom and others against BCL, or in reverse those issues raised by BCL against Telecom. What he does here is to basically ignore the complaints of lesser participants in the melee reducing the 'fight' to Telecom vs. BCL and BCL vs. Telecom.

"The major site proprietors - especially BCL and Telecom - are also those whose resources place them in the best position to seek through the courts a remedy for anti-competitive practices."

"That they have not done so may be attributable in part at least to the fact that each of the major site proprietors appears to be concerned about the implications for its own access and pricing policies of a broadly based enquiry under the Commerce Act."

***/ BCL is investing \$10m, or 25% of a \$40m project, with Clear Communications for a fibre-optic system on North Island scheduled for August 1995 completion. TVNZ owns a significant share of Clear Communications.

"Other companies with radio interests - RNZ, BellSouth, Clear Communications, SKY, Transpower and TV3 among them - also have the resources to take action under the Commerce Act had they wished to do so, but have not.

"(In short) the industry appears to have decided to get on with the business of dealing with the market as it is, rather than wait for it to become the market it would like it to be."

Observation: RNZ, Clear Communications, and SKY (three of six firms named as capable of taking a grievance to court) are affiliated with BCL. BellSouth should be judged by its status as an operating business in December of 1992 rather than its status today; Transpower for the club-status it jointly holds with TVNZ. TV3, then, is the only firm listed even remotely likely to bring such a suit. Readers are reminded of the December 1992 'critical state' of TV3 finances and to consider how a firm facing day to day operating cash shortages might bring such a suit.

Interpretation: The two big boys (Telecom, BCL) had reached a working agreement concerning sites. It is not perfect but it took this Ministry off the hook to settle the squabble. Neither firm was likely to take the other to court under Section 36 because each may have engaged in trade practices which a court might find undesirable. People who live in glass houses ...

And Donaldson closes the matter by noting:

"Our conclusion is that there is no reason on the basis of our study to question the adequacy of the institutional safeguards against anti-competitive practices under the Commerce Act."

THE END?

David A. Galt in September of 1991 raised a number of questions for concern to the Minister of Communications. Hunter Donaldson in December 1992 attempted to provide a summary report and answers to the Galt-raised concerns. The 'tone' of the Donaldson report might be summarised as follows:

- 1) We had received a number of complaints about hilltop site operators
- 2) These complaints came from every level of site user
- 3) We chose to focus on the complaints originating from the larger users
- 4) We found that typical site users were also site operators themselves
- 5) We also found that alleged abuses flowed both ways; a firm complaining about alleged abuses at one location was the subject of complaints at another location
- 6) We created an official dialogue with the site operators
- 7) From this dialogue we have seen an improvement in relations between competitive site operators, an agreement to end alleged abuses of the past (without an admission that such abuses actually took place)
- 8) We are satisfied that the site abuses reported are now lessening
- 9) We have decided no Ministry action is required because those who allege abuse could, if they wished, take their allegations to a court of law

Where does that leave John Howard and his Regional Television Trust? Howard, you may recall, had sought relief from what he perceived as abuse encountered during his attempted dealings with BCL over use of a transmission site to serve the Waikaito region for 'public television.' Howard was told by an investigator for the Commerce Act Division:

"...the whole issue of access to telecommunication sites was comprehensively investigated by the Ministry of Commerce who found no evidence that BCL was discriminating against non TVNZ broadcasters as regards access to its transmission sites."

As you have seen, that statement does not accurately reflect the content of the 'Donaldson Report' as related here. On the surface, Howard's complaint to the Commerce Department could have been the first step in doing what Donaldson suggested a firm should do if it felt violated. But the existence of the 'Donaldson Report' to Williamson places Howard and others like him in a vice. The very people which the Act designates to be watchdogs for implementation of the Act (recall that Howard's response came from David Taylor, Chief Investigator, Network Industries Unit, Commerce Act Division) hold the Donaldson document in hand to wave in defence of actually doing anything about allegations of abuse. Taylor's response to Howard's complaint might cryptically be summarised as:

"Been there, done that; go away."

THE FUTURE

If the matter of hilltop site abuses is dead, it may not yet be buried. Donaldson suggested to Minister Williamson in his closing paragraph (21 December 1992):

"(that you) direct the Ministry to consult all interested parties on this issue again in mid-1994, with a view to establishing whether any further grounds for concern have arisen by that stage, and report to you on these consultations by 30 September at the latest."

One of the possible interactions not foreseen by Donaldson in late 1992 was the current plans of the Ministry of Commerce to have completed the VHF Management Rights programme by this September. In the process of granting market-tradeable licenses to TVNZ (and TV3) under the VHF Management Rights scheme, John Howard's concerns that BCL does not own many of the 'more than 500' transmission sites it claims becomes a factor. Someplace in BCL is buried a file cabinet and desk that administers the 'use of sites' department. How many of the to-be-granted Management Rights licenses will specify pieces of land now in use but for which use BCL has questionable legal status and rights? Howard believes that before TVNZ can accept their licenses the legal status of these sites should be reviewed by an independent body, outside of BCL and TVNZ.

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TECHNOLOGY

BYTES

...BITS AND BYTES YOU MAY HAVE MISSED IN THE RUSH TO MAKE A BUCK...

SATELLITE TV

TVNZ use of National Transcommunications Ltd (NTL) digital video system package will allow upgrading to MPEG-2 format in future. NTL advises CTD *"Our MPEG-1+ is well on the way to MPEG-2. The original MPEG was for low resolution and low data rates. Our implementation works at Rec 601 resolution with interlace and it is eminently suitable for broadcast applications. Clearly MPEG-2 will take over in due course. Our existing (MPEG-1+) encoders can be readily upgraded to MPEG-2 with module replacement. Decoders cannot economically be upgraded but these are much less expensive."* TVNZ had been scheduled to begin use of double-hop relay from UK to New Zealand via Indian Ocean Region Intelsat at 57 east, then Intelsat at 180 east for compressed digital video BBC feeds in February. As of our close March 20 this digital feed had not begun and analogue transmissions from the BBC to TVNZ/SKY continue. NTL advises their TVNZ selected System 2000 end-to-end video compression system has built-in encryption to prevent unauthorised decoding of signals.

Saudi Arabia has once again adopted legislation banning the sale and installation of private (home) satellite TV dishes. This is the second such 'law' adopted by the country. Oil-advantaged individuals have been purchasing monstrous 7-10 metre dishes for private use since 1981. More recently, new Ku band satellites capable of delivering quality pictures to dishes as small as 70cm have made it possible for less wealthy individuals to tap into European programming for typically under NZ\$1,500. The new law states that no person or company has the legal right to deliver into Saudi Arabia television programming without the Kingdom's approval and cites concerns that such 'foreign programming' undermines local social and religious values.

Canadian authorities, fearing the wholesale importation of American TV programming into Canada via the new (April start) digital format (US) DirecTv satellite system have increased American programme content on Canadian operated satellites. Much of Canada will receive the new DirecTv signals with dinner-plate sized 50cm and smaller antennas and Canadian cable operators and broadcasters fear the 150 channels to be available by late this year will seriously erode Canadian programming. To counteract the threat, Canadian Satellite Communications (CANCOM) is adding new Seattle and Minneapolis area (US) programming for Canadian cable systems; an attempt to beef up the American on-cable content and hopefully defuse the attractiveness of the DirecTv offering. The Canadian cable industry has dubbed the DirecTv service 'Deathstar' as a reflection of their concerns about their ability to compete with its wide reach and low cost hardware.

DirecTv is using (video) Laserdisc disks as a combination sales demonstration aid and training tool for the more than 2,000 new hardware dealers handling the DBS satellite TV system in North America. The laserdiscs have been arranged in '21 viewing chapters' typically around 3 minutes in length. The retailer will be able to answer specific customer questions by directing the laserdisc to playback the chapter which most approximates an answer to the question posed. In this way dealer training has been initially shortened and customers always receive the same (precise) answer to questions. Thirteen of the chapters deal with installation steps and trouble shooting as a field personnel training tool. Dealers handling DirecTv product line will have 20-30% 'margin' at retail. 'typical of consumer electronics' according to Thomson source. DirecTv service kicks off April 25 in four markets; Albuquerque (NM), Jackson (Ms), Little Rock (Ark) and Shreveport (La).

Ariane launch failure January 24 (see CTD 9402; p. 32) appears to be translating to 3 month minimum slowdown in scheduled launches for balance of 1994-early 1995. This places PanAmSat PAS-2 satellite, for 169 east, off until mid-August launch period, possibly pushing satellite operational date to mid-October. Intelsat 703, scheduled for October activation date at 174 east, is now not likely before end of December. DirecTv has switched from scheduled Ariane July launch of its second DBS satellite to an Atlas rocket launch. DirecTv, with entire kick-off year riding on timely launch of second satellite, decided not to risk serious delays as Ariane sorts out launch problems. North American domestic satellite, Hughes Galaxy 1R, was launched from Cape Canaveral February 19 by McDonnell Douglas Delta 2 rocket.

-MARCH 25th UPDATE - PACIFIC SATELLITES-

177W/Intelsat 503/510: 503 now being retired in favour of 510 which was moved from 174 east. In position, 510 has inclined orbit +/- 1.3 degrees. Seldom carries C band video.

180/Intelsat 508: Now 2.3 degrees inclined orbit (increasing to 3.0 degrees by December), scheduled replacement by 701 in April 1996. Primary TV satellite for South Pacific.

177E/Intelsat 511: Inclined orbit now 1.3 degrees; scheduled for 703 replacement last quarter this year. AFRTS (B-MAC scrambled) here; occasional Japanese unscrambled C band video.

174E/Intelsat 701: New this past January; geostationary. Primary telephone, data satellite, has C and Ku band capabilities. Occasional C band video.

169E/PanAmSat PAS-2: May launch now unlikely before August. operational possibly October. Will provide C and Ku band services to South Pacific with significant signal levels (see CTD 9312).

Tonga and Indonesia have quietly settled confrontation over which nation has the legal right to park a satellite at 134 degrees east. Tonga basically wins argument. Tonga was first country to 'register' 134 east location with Swiss based IFRB, but Indonesian group was first to occupy position. Tonga has leased the spot to US based Rimsat which operates aged second-hand Russian satellite as a TV relay into India from this spot. Indonesian group, using second hand Palapa satellite retired from service, has only occasional customers for their satellite. Both birds operate in what is known as inclined orbit (like Intelsat at 180 east) and this requires earth stations to track satellite(s) north and south of equator. The two satellites are not likely to actually hit one another, but twice each day they share a common 'boresight' (apparent point in sky) and during this period ground stations looking at one of the two could experience interference from other. In agreement, the two satellite operators will attempt to coordinate their use of frequencies such that interference is minimised. Although neither nation has said so, the agreement apparently recognises Tonga's earlier 'claim' on 134 east.

Brasil has become a new hot-spot for home satellite dish sales. Sales topped 20,000 for the month of January and are expected to double again by July. American programming on a regular basis became available via satellite to Brasil 10 months ago and the demand seems to be driven by this new programming availability.

BBC is in danger of being 'dropped' by Murdoch's Star TV satellite service in Asia. Murdoch claims BBC has not been properly responsive to complaints voiced by governments of India and China that BBC news content unfairly maligns both. Murdoch, appearing in New Delhi, was answering criticisms that BBC news coverage was deemed unsatisfactory in India. He told Indians he does not wish to replace BBC World Service TV with an alternate news service (his own SKY News was mentioned) and hopes "*BBC will correct their news coverage image before this drastic step has to be taken.*"

British Air is launched satellite-fed TV service for airline passengers this month on long-haul flights. One channel provides light drama, music, movies, comedy and news to economy class passengers; Club and First Class will have 8 channels delivered to individual viewing screens, 3 of which will be movies.

WorldJazz is new internationally distributed cable channel with planned September 15 launch date. Service will be initially offered in US and Japan (with satellite link); a business partner for the advert supported channel is sought for Europe.

-PACIFIC SATELLITE AUDIO SERVICES-

180/Intelsat 508: Normal audios on 6.6 MHz. Others include: **3720/ESPN** 'Morse' 7.20; **3845/CNN** 'Morse' (program schedule in code) 7.2; **3876/NBC&CNBC** Vidiplex Frame 'A' 5.58, Vidiplex Frame 'B' 5.73; **3894/CNBC&CNN&BBC** 5.76, 6.6; **3930/Feeds to Ch.9 Australia** Vidiplex Frame 'A' 6.12, Vidiplex Frame 'B' 6.30; plus 6.65, radio feeds 5.60, 5.74, 5.42; **3975/Worldnet& Deutsche Welle** VOA English, Spanish 7.02, VOA French, Spanish 7.20, VOA Vietnam and Tibet 7.35, VOA Laos, Korea 7.45, VOA Chinese 7.53, VOA English 7.60; **4015/ABC(US)**, NHK 6.60, 7.50; **4045/RFO** 6.65; **4135/Nine Australia**; **4166/TVNZ** inbound feeds 6.65; **4188/TVNZ BBC/WTN/sports** feeds 6.65.

177E/Intelsat 511: **4177/AFRTS** radio audio 7.40.

174E/Intelsat 701: 4166/Occ. video 6.60, 6.65; **4177/CCTV** 6.60, 6.65

140E/Statsionar 7: **3875/** 7.50 programme audio, 7.00 Radio Moscow

134E/Rimsat: **3725/Sun TV** 6.60

PERSPECTIVE: MPEG STATUS AT A GLANCE

First there was MPEG, a digital video format that would become a standard. The original MPEG, later called MPEG-1 to differentiate it from an improved version known as MPEG-2, allowed standard analogue TV signals converted to digital data to be compressed in time and space into smaller bandwidths.

As the compression technology matured it became apparent that selected categories of video could be compressed (reduced in bandwidth) more than others. Images with lots of motion, where the motion was spread randomly across the screen image, were the most difficult to compress. Head and shoulder video images, such as news presenters, had little motion and could be compressed into far narrower bandwidths than Rugby matches.

The question became, "*How much compression of the signal can be done before the images are degraded?*". The object was to settle on a compression algorithm (or specified technique) which could become a 'world standard.' The hope was that by having a world standard, virtually any TV image created anyplace on the globe could be displayed on any receiver built to the standard. The promise was that MPEG compressed digital video would end forever the NTSC/PAL/SECAM and variants of the communications world as well as the special video formats required for computer displays. The economies of having a single world video standard were obvious to all.

The MPEG-1 standard, the early attempt at a global format, was first formed in 1988. It defined the coding of video for digital storage media up to about 1.5 Mbits/s. MPEG-1 was designed for progressive scanning, such as is used in computer displays, with 288 video lines each containing 352 'pels' or points of data information. This was not a (broadcast) quality video standard as its resolution (definition) was similar to VHS videotape.

The MPEG-2 standard was first offered in 1991 as a generic standard for all applications, including (broadcast) quality video. MPEG-2 changed to interlaced scanning (such as broadcast TV uses), and added audio parameters to the system. With dozens of new commercial firms interested in MPEG standards, the original 1991 offered MPEG-2 evolved with improvements and modifications until April, 1993 when by agreement it was 'frozen' to the syntax (data processing protocols) as they then existed.

Parallel to the defining of techniques and a standard was the creation of a new 'signal transport' standard. Images in digital form go no place useful unless there is a transportation (transmission) system. The US adopted a transport system developed by the Zenith Corporation last month (February); other countries are in the process of refining their own transport systems.

MPEG-2, the digital video standard, meanwhile has been working its way through the various technology bureaucracies in the world. For MPEG-2 to be a true world standard, to which all future television and computer equipment will be built, there must be agreement amongst the many often competitive standards organisations that MPEG-2 is worthy of such stature. This procedural process should be completed by November of this year. Until this approval process is complete any manufacturer building equipment to the MPEG-2 format is at some (small) risk. Although the syntax (parameters) of the format were frozen in April of 1993, and are commonly available in technical detail to anyone who wishes them for equipment design purposes, there remains the chance that some engineer stumbling into the daylight from a darkened laboratory tomorrow will shout 'EUREKA!' and offer to the world something better, cheaper, faster than MPEG-2.

On the other hand, once the last standards approval is in place and the Sonys and Zeniths and Thomsons of the world begin to crank out MPEG-2 syntax equipment in quantity, all of the engineers in the world shouting 'EUREKA!' in unison could not stop MPEG-2.

Along the way to world acceptance we have a few firms who have created their own variants of MPEG for products unique to their own manufacture. NTL has created such a TV package and sold it to our TVNZ for relay of BBC television programming to New Zealand. General Instruments has created their own variant which is going into use in US cable systems. Scientific Atlanta has their variant which is in use feeding hundreds of South American cable TV systems, via satellite, with US TV programming. There are dozens of additional examples. Equipment manufactured and sold using these variants will always be orphans and for some users, such as TVNZ, this 'uniqueness' of format is a deterrent to non-authorised use of its BBC feeds since MPEG-2 receivers, when available, will not respond to the syntax variants of the NTL system.

But the real MPEG-2, as a world-wide format, will be universal in application for both the video and computer industries. The economies of being able to manufacture one TV set for the world, of being able to manufacture one display screen for either TV or computer use, is undeniable. Alas, it will not happen overnight and most realistic observers believe a full decade will pass before the full impact of MPEG-2 is so pervasive that analogue

British Sky Broadcasting has paid first dividend to shareholders; NZ\$150m. A reported NZ\$4.8B has been invested into the system to date.

DIGITAL TV

Zenith, US consumer electronics manufacturer and early pioneer (1946) in the delivery of pay television to the home, has won the nod as the creator of the preferred technology to transmit digital television in North America. Zenith was one of two 'finalists' in the selection process; their 8-VSB transmission system ultimately proved to be superior to competitive General Instrument/GI QAM system. Decision makers found Zenith system offered superior performance under noisy conditions, improvements against multipath (ghosting) and superior cable TV distribution qualities. In one subset area where GI was superior, against aeroplane flutter, Zenith and GI have agreed the Zenith system will adopt the GI algorithm. Next step are field tests using over the air transmitter(s) in last quarter of this year followed by coast to coast roll out of system during 1995. Some hope to offer 1996 Atlanta Olympics at least partially in HDTV format.

Unless ... COFDM gets a serious look. After nearly a decade of semi-serious and three years intense study of possible formats for HDTV, only days after 'Grand Alliance for HDTV' reached agreement on final portion of system, COFDM appeared. Coded Orthogonal Frequency Division Multiplexing is serious contender for British standard (developed as BBC/Thomson-CSF Spectre system) and in Scandinavia where it is known as HD-Divine. The COFDM concept is that rather than transmitting one single (digital) carrier containing all of the modulation information, a number (such as 500-2,000) separate 'tiny carriers' are transmitted, each carrying a part of the modulation. Why? For one thing it appears from tests in the UK that COFDM is far less prone to interference. And, COFDM lends itself to 'translators' (low power signal repeaters for shadow or distance disadvantaged locations) more readily than single-carrier technology. Some US next-generation TV designers believe COFDM should have serious consideration before last word is said concerning full selection of over-the-air digital TV HDTV standard.

Japan's fully functional HDTV system (called MUSE) is going down fighting. The analogue system, requiring approximately twice the bandwidth of normal TV, has been in use through their domestic BS-3B (Ku band) satellite several years attracting 15,000 thousand set owners who have paid significantly (upwards of NZ\$10,000) for specialised receivers. Japan's Director General of Broadcasting Bureau in interview with French news agency late in February stated that MUSE would be shut down and replaced with digital TV system. Day after report appeared, Japanese government reacted by announcing MUSE would be around for awhile yet; one official said "*until past 2000.*" This may have softened the blow but NHK, which operates MUSE system, was still concerned. The issue came down to what works 'today' and how long it might be before replacement 'digital system' is on line. For the Japanese, MUSE works now and while it may be a heavy spectrum user, fact remains their country not only created HDTV first, they also put it into widespread use first. NHK believes an additional 10,000 MUSE receivers will be sold to the public in 1994. Longer term, the Japanese insist present MUSE receivers can be adapted to digital HDTV with external conversion box so those purchasing MUSE receivers now will not be left with unusable equipment.

CONSUMER ELECTRONICS

Full-size camcorders, losing ground steadily to compact (palm size) 8mm and VHS-C units since 1990, had a world wide resurgence in 1993. In 1992, compact camcorders had grown to a point where 3 were manufactured and sold for each 1 full size unit. Shipments in 1993 reflected a 15.8% increase in full size sales versus 7.8% for compact models; the first such 'bias' for full size units since 1989.

US VCR sales in 1993 broke down in the following categories: 45.8% of all units were four head monaural, 28.1% were 2 head monaural, 26.1% were four head stereo and 0.7% were S-VHS. In the colour TV field, 42.5% of all TV direct-view sets sold in 1993 had stereo reception ability, up 2.0% from 1992. Statistics New Zealand does not track such statistics (see CTD 9402).

Lower VCR prices for basic models continue to be announced; latest is JVC with 2 head model starting at NZ\$394.

US computer sales in 1993 totalled 13.6 million units of which 2.7 million went into private homes for non-business use representing 20% of all computer sales. Projections are that home-use computers will total at least 35% of the market by 1997; 5.9 million units are forecast. Statistics suggest 2.74% of all US homes added a personal computer in 1993; a similar percentage in New Zealand would have amounted to 30,140 home computer sales in 1993. The actual sale of home computers in New Zealand for 1993 is not known.

PERSPECTIVE: FUZZY vs. ARISTOTELIAN LOGIC

New Zealanders, with European ancestry, have over nearly 100 generations perfected a form of thinking based upon the philosophies of Aristotle. The logic of this Greek philosopher is so ingrained in our heritage that almost none but scholars recognise its origins.

Aristotle conceptualised that objects fall neatly into one of two categories; type 'A', for example, and everything else. We paraphrase Aristotle today by calling things black and white, plus and minus. Computers are programmed according to a state; there are pluses and there are minuses and nothing in between.

The Japanese, indeed many Orientals, evolved without the teachings of Aristotle and his disciples. But it was the middle eastern tribes of post-Christ who best perfected a technique modern day theoreticians call 'fuzzy logic'. And it was an Iranian born professor at the University of California, Berkeley, who apparently coined the phrase. Loft Zadeh, a mathematician, found inner strength and balance in his world of equations by perfecting a technique that originated without fanfare from Englishman Bertrand Russell.

Aristotle taught that for any problem there is one correct answer, and a multitude of incorrect answers; the 'type A' and the not type A syndrome. Russell suggested that even in the rigidly disciplined realm of higher mathematics there might be more than one correct answer to a complex equation. Long after his death Bertrand Russell has been dubbed the 'grandfather of fuzzy logic' and it was Professor Zadeh who conceptualised the term.

Fuzzy logic recognises that the world is not all plus and minus, not all black and white. Few of us would argue that the world has infinite shades of grey. But in problem solving, especially in higher mathematics, until Zadeh built his case, the entire premise was totally foreign to learned recognition.

A favourite illustration is a bald man. We can all recognise that Telly Sevalis, the actor who played policeman Kojak, was indeed bald. Now ask yourself at what point did Kojak become bald? Take a man with thinning hair and pluck a hair. Is he now bald? How many hairs must be plucked before the man is bald? All of his hair?

The answer is vague; Bertrand Russell would have said it is 'fuzzy.'

Temperature, distance, pleasure, friendliness, greenness ... even beauty all come with a sliding scale. How high is tall? How far down is deep?

The Japanese computer programmers have seized upon the world of fuzzy logic with a vengeance. And they have created, are creating an entire range of consumer and industrial products that depend upon fuzzy logic. Camcorders that adjust the focus, set the CCD imaging gain, even correct for camera instability are programmed with fuzzy logic algorithms. There are smart washing machines, smart elevators, smart microwaves and smart toasters all employing fuzzy logic principals. In the past three years fuzzy logic has become a best selling topic for Japanese book publishers. Japanese prime time TV runs specials explaining the underlying principals of fuzzy logic; politicians in the Japanese Diet (Parliament) have debated the meaning of fuzzy logic (not to be confused with some of our own Parliamentary debates which are Aristotelian in basis but fuzzy in content).

Perhaps the least fuzzy-logic minded of all are the Americans who largely cling to the belief that there is one right answer to every problem and an incalculable number of wrong answers. And this shows up in American products, American computer programmes, American law. Our law, like American law, demands that we find a person innocent of a charge if there is even a 'shadow of doubt' as to the guilt. In America this leads to a system of plea bargaining prior to court appearance; a person who might not be found guilty of premeditated murder, for example, accepts a lower charge of manslaughter in lieu of risking being found guilty of the greater crime.

There is increasing evidence that products and services of the 21st century will rely less on black and white and more and more on the fuzzy world of grey. The Japanese, with a tradition steeped in the teachings of Buddha, not only allow for shades of grey but actually demand it as a basis for life. If New Zealand is truly on a path of merging with the marketplaces of south-eastern Asia our own educational system will need to adapt to the world of fuzzy logic. Our scientists, engineers and marketing people will need it to compete.

Flat panel technology, forecast to replace standard cathode ray display tubes by the end of the decade, has another technology contender. Field-emitter displays (FED), originated by a research project at the University of Texas, are now undergoing commercial development through a contract from the (RCA/Thomson) Sarnoff Labs. FED creates a glass sandwich approximately 3mm thick which its creators claim produces images with less distortion and greater brightness while consuming lower amounts of AC mains energy than LCD displays. A number of firms including Motorola and Sanyo claim greatly enhanced LCD systems are to be available in consumer products by 1995-96 and Matsushita is already delivering 14" beam matrix flat screen displays of unconventional design (see CTD 9309;p.17).

40 inch/1016mm wide LCD 16:9 widescreen LCD display screen TV receiver from Hong Kong's Kong Wah Holdings uses three LCD screens placed end to end for wide screen effect. Receiver is 356mm deep.

Nintendo/Silicon Graphics 1995 scheduled release of 'Project Reality' 64 bit (speed) super-game system will not use anticipated CD-ROM as game medium. Nintendo plans to use newly developed 'silicon cartridge' citing speed as the decision making criteria. The new cartridges will hold a minimum of 100Mb of data per game with an access time 'two million times faster' than CD-ROM (see **CTD 9402**; p.13). Nintendo plans to sell the new 64-bit Project Reality silicon cartridges at about the same price as current 16-megabit units; NZ\$125 list. The player system hardware will be in the NZ\$450 list region.

Panasonic/3DO player, introduced into US at NZ\$1250 price, has been dropped to NZ\$900 in North America. 3DO also promises MPEG (video) adapter cartridge at NZ\$450 before June.

Sony will begin marketing in California a vehicle navigation system using a combination of the GPS (global positioning satellite system) and their Etak CD-ROM software that creates a full colour local 'map' of the area on a 5"/127mm screen. The new system provides vehicles with a 'moving map' on screen by interfacing the GPS determined location of the vehicle with CD-ROM stored full colour maps. All of this tells a vehicle operator not only where he or she is located on the screen, but with the mapping shows alternative routes to arrive at a destination. Delivery of the system is expected after July, initially in southern California, at a price of around NZ\$4,100 plus installation.

Child Locator is new product from Yes Entertainment. Small battery operated 'transponder' straps to child while base unit has three adjustable 'ranges;' 7.6m, 15.3m and 30.5m. If child wanders outside of pre-set 'range' indoor controller box squawks and turns on light as warning to parent/guardian. Price is \$125 list from Pleasanton, California firm.

Telephone that recognises up to four separate user voices holds 40 names and 120 telephone numbers in memory. To use, caller speaks party-to-be-called name into mouthpiece. Instrument searches memory for number, places call with speed dialling. Creator is Voice Powered Technology; no price has been announced.

TV Graffiti is new hardware/software system that attaches to TV set allowing user(s) to draw their own on screen cartoons or manipulate pre-drawn cartoons from 150 images stored in the device. Images have 'thought bubbles' to allow creation of customised dialogue and any images drawn can be saved on videotape.

Widescreen maverick format PalPlus in Europe has received an unexpected shot in the marketplace because of competitive efforts by German broadcasters. Premiere, satellite delivered pay movie service, has begun showing widescreen films in their original format and hopes to deliver more than 1,000 hours of such films this year. PalPlus was created as a defensive 'format' to counteract satellite delivered MAC and HD-MAC formats of some years ago. Neither of these formats survived in the rush to digital and MAC itself is being replaced world-wide (except in Australia). PalPlus produces 16:9 full resolution pictures to suitably equipped TV sets and Philips says it will introduce PalPlus receivers, followed by VCRs and decoders, later this year. This in turn has forced Grundig, Nokia and Thomson to suggest they, also, will offer PalPlus receivers. In PalPlus, the standard 625 line PAL format video (of which 576 lines are 'active') information above and below 432 lines (centred on screen) is transmitted during the vertical blanking interval. 4:3 receivers produce a 432 line picture in letterbox format, 16:9 format screens reprocess the missing 144 lines and add them back reinstating the full 576 active lines in the wider screen format.

European TV set marketplace bought 580,000 Dolby surround sound equipped receivers in 1993 and projections are calling for more than 1 million units to be sold in 1994 growing to 4 million in 1995.

International nature of modern day consumer electronic manufacturers is evident in release from mid-sized Korean firm Daewoo. Firm recently completed 700,000 TV-set-per year production facility in Mexico to serve North, Central and South American markets. Daewoo also owns or holds controlling interest in Tashkent (Uzbekistan) TV and appliance plant, Fameck and Longwy (France) colour picture tube plants with 1.2 million per year capacity, Tatarstan (Russia) TV plant, (Poland) TV production plant and distribution arrangement with Philips in South Africa for 100,000 TV sets annually.

Impact of labour on electronic products is evident in report from Chinese Electronics Ministry. As world's leading exporter of cassette style recorders, China shipped 113 million units in 1993; average factory 'price' of NZ\$2.39. China exported NZ\$14.6B in electronics in 1993. The bad news was that in same year country imported NZ\$19.1B in electronics adding to growing concern for trade balances.

PERSPECTIVE: BOOKS ON DISKS

Virtually every form of communication is impacted by the convergence of computers and telecommunications. Some industries embrace the new technology challenges, others resist. Book publishers, quick to embrace the technology of computers in preparing their products, have been painfully slow to recognise potential new markets offered by placing their products onto disks.

The proposal is to place newly released books on 3-1/2", double density floppy disks co-packaged with the more traditional wood pulp versions. That's one copy for you to read on a train or plane, another disk copy to read when your PC is convenient. A study by McGraw-Hill found that popular new titles could be offered on disk for less than US\$1 extra per copy than a paper version alone; a small premium against large potential returns.

The benefits are inarguable: More material per unit of shelf space, greater permanency. Word and topic search would allow users to quickly locate favourite passages, topics they need quickly. And the disadvantages: copying is a worry but most of it could be controlled with software protection routines. One argument is that if disk copies are inexpensively available the incentive to make unauthorised copies would disappear, unlike software programmes which may charge hundreds of dollars for a single disk. Publishers have somehow managed to survive the Xerox revolution; they will manage the microchip revolution as well.

A limited number of publishers have taken the plunge to date. Voyager Company has digitised versions of Jurassic Park and Alice In Wonderland; hardly classics but certainly classical. Other 'obvious choices' for disk are to date not only not available on disk but unplanned. Bartlett's Quotations is one of these; anyone who has spent tens of minutes trying to locate a particular quotation would instantly appreciate the advantages of a word search routine.

Off in the future we are told to anticipate multimedia CD-ROM books that combine text with graphics and sound (see CTD 9311;p.29). It is likely to be several years before sufficient CD-ROM hardware exists in quantity to attract 'routine CD-ROM releases' of multimedia texts. In the interim, even after these far more expensive titles become commonplace, there is and will continue to be a need for relatively simplistic conversion of text to floppy.

There are business opportunities here; rights to convert existing texts to floppy could be negotiated with many publishers, titles converted using freelance labour working out of their home. If the major publishers are not intrigued by the possibility of offering packages that combine disk and paper versions, small low capital businesses could prove the market by negotiating disk rights and undertaking the conversion and marketing on their own. Straight text, whether fiction or non-fiction, lends itself to floppy disc storage very neatly.

A case in point is the audio book industry; unknown a decade ago, today valued at more than NZ\$1.8B annually world wide. Sony Walkmans and car stereo players have made this industry 'happen.' Would authors want to sell their digitised books separately, as they now do with audio book formats? Does a publisher purchasing the rights to a book for conventional paper-publication automatically gain the rights to distribute (or withhold from distribution) the same publication on disk? Individual author-publisher contracts differ, of course, but it is likely that many authors have retained (perhaps without being conscious of the fact) disk distribution rights just as they have retained audio book rights.

There's a business here just waiting for the right entrepreneurial approach.

Consumer camcorder with time coding feature (for precise editing) has been released by Sony in Japan. Feature, normally found in commercial units only, is combined with colour viewfinder, electronic image stabiliser, 10X zoom at NZ\$3600.

JVC plans to introduce higher picture quality S-VHC-C camcorder in July. Primary technical advantage is that 500,000 pixel CCD greatly improves picture resolution/definition when camera is correcting for movement with image stabilisation. Price is likely to be in region of NZ\$2900 or at top end of camcorder range.

Minicomponent system from Matsushita, equipped with video CD, goes on sale in Japan April 1st with exports to balance of world in July-August. Price of multimedia system is NZ\$2125 and initial video CDs available are Karaoke (set of five at NZ\$370).

Video CD discs are not interchangeable between PAL and NTSC areas without some problems. NTSC releases, likely to be available 6 months earlier in North America and easily transported between areas, will play poorly here on PAL area video CD players. Format causes 525 line video to appear in letterbox frame on 625 line sets while in reverse 625 line format CDs end up with vertically stretched faces ('tall, thin people syndrome').

London based Thorn EMI operating consumer electronic Rent-A-Center chain of stores in US was accused in September 22 (1993) Wall Street Journal story of employing high pressure sales tactics and abusive collection procedures. Wall Street Journal story claimed firm routinely used notorious Hell's Angels motorcycle gang members for collection purposes, and that company employees encouraged the trading of sexual favours from customers behind in payments for additional time to make payments. The story created a series of calls for new rent-to-own regulations in US including adoption of a 'Rent To Own Bill Of Rights.' Thorn EMI then conducted its own investigation of allegations engaging a retired US Senator from New Hampshire to head up study. In report issued late in February, (former) Senator Warren Rudman released synopsis of his group's findings in which he said, *"We are sure some misconduct occurs, but it is pretty isolated, it's not pervasive and it's not company policy."* A detailed report is scheduled in May.

Japan, Inc. business losses continue. Latest reports: Sony net income down 40.6% first 9 months current year, sales off 7.4%; Pioneer net down 29.8% first 9 months, sales down 15.1%; Matsushita net down 27.0%, sales down 8%. See CTD 9402, p.21.

CABLE/FIBRE OPTIC TELEVISION

500 channel television, the concept, is undergoing a rethink in the United States as the reality of virtually unlimited bandwidth begins to find its way to the cable industry bottom line. When compressed digital video was first announced there was an assumption that most of the new channel-widths would be filled with programming not dissimilar to that now found on the more progressive 100 channel cable systems. That premise is appearing less and less likely as the accounting side of the cable industry forces the programmers to justify the costs for programming 500 channels against likely revenues from the new services. Cable's strength to date has been variety; offering subscribers a broad universe of programming at times designed to attract the maximum viewing of individual programmes. But the costs associated with launching new satellite delivered 'niche channels' (programming for specialised groups of people with narrowly defined interests) runs upwards of NZ\$90m with no guarantees the service will succeed in the marketplace. Now, more attention is being paid to recycling of existing channels either through time-displacement (offsetting 24 hour service channels by 3,6 and 9 hours to reshow the same material on a delayed basis) or through on-demand orders (subscribers request 'private showing' of specific programmes to suit their viewing time). Another area of interest is 'time reduction' based upon a recently announced VCR principal from Sanyo. The firm will in September begin shipping (NZ\$1125) a new VCR that double-speeds the playback of a programme (2X) but processes the audio digitally such that human speech and music come out at a digitally mutated 'natural sounding' speed. The concept is that 2 hour movies can be watched and enjoyed in half the time, 30 minute newscasts in 15 minutes and so on. Another concept receiving increased attention is 'infomercials;' programmes created for the primary purpose of selling product. Programmers believe that combining entertainment with salesmanship will be the new television wave and firms with products to sell will increasingly pick up the costs for producing and distributing such programming in return for the commercial message content.

Philips plans to become large owner/operator of European cable TV systems. In partnership with United International Holdings, the two firms plan to pursue cable projects in ten European countries with ultimate goal of reaching 5 million cable subscribers. United has cable systems in Israel, they become part of the joint venture.

Yellow page directory, interactive, is possible use of spectrum space under investigation by BellSouth and Cox Cable team. Test projects in North Carolina, South Carolina and Alabama are planned.

What do homes with dozens, perhaps 100, TV channels watch? According to a US study in November (1993), of total daily time: 20.0% was spent watching network (ABC/CBS/NBC), 7.8% on 'basic cable' channels, 3.4% on independent (non-network) channels, 1.9% viewing programming from a VCR, 1.5% on 'pay cable,' 1.1% on public (non-commercial) TV, and 0.4% playing videogames. The total is 36.1% of a 24 hour day or 8 hours 40 minutes per day, one or more TV sets in the measured households were 'turned on.'

Apple Computer with Oracle Corporation has become the latest computer-world firm to join the rush to offer cable television 'set-top' converter boxes for digital format cable distribution systems. The new box will begin field trials in June-July and is based in part on the Macintosh computer.

VIACOM conglomerate firm has won 5 month bidding war to take over movie and television producer Paramount. Viacom, after merger with video retailer Blockbuster, ends up paying in excess of NZ\$18 billion for Paramount. What they get for their money is access to huge library of television and movie productions, production plant for new movies and TV programming, plus ownership of, or interest in, various sporting clubs including New York Rangers (hockey), Knicks (basketball) and cable networks Madison Square Garden Events and USA. Viacom

has signed agreement with PanAmSat to use transponders on new PAS-2 satellite scheduled for second-half 1994 operation from 169 east and they have frequently stated their intent to be a 'global media powerhouse of unparalleled proportions.'

British Telecom has chosen US Oracle Corporation to provide interactive TV software for its I-TV service tests. BT plans to offer video on demand, home shopping and banking on trial for last 8-9 months of this year.

TERRESTRIAL BROADCASTING

Regional Television Trust Chairman John Howard by inviting New Zealand On Air to take him to court for his public refusal to pay annual broadcast license fee could become rallying point for those opposed to the fee or the way it is perceived to be spent. Howard believes the annual fees should be proportionately spent to establish television transmission facilities and his Waikato region trust has been attempting to secure NZOA funding support for a non-commercial, public television channel for two years. NZOA maintains their legislation-rooted statutory obligation is to provide funds for the development of New Zealand culture television, and, to maintain 1989 levels of TV1 and 2 service. It was the fear that overseas programming would be cheaper to air than home grown product that led to the present NZOA scheme. In the most recent year NZOA has been able to fund television programming to occupy approximately 30% of the broadcast hours for TVNZ and TV3. Howard's exasperation with NZOA responses to his Trust's requests for equipment funding led him in early March to challenge through the media NZOA's legal right to collect fees. Howard, on advice of counsel, believes that for NZOA to press him successfully through the courts for his unpaid license fee they must first prove in court that he has a television receiver in his home (i.e., a 'debt' to NZOA). He does not intend to give them that opportunity. NZOA has repeatedly taken the position that it funds programming, not equipment. Howard believes there have been examples to the contrary including an Auckland firm which produced a programme series for TV3 that he alleges set up a subsidiary to purchase \$120,000 in video equipment from a name-brand supplier with funds it received from NZOA for the production proper. Equipment to produce the programming, claims Howard, did not exist when the production company was awarded the contract and was purchased with NZOA funds. He does not suggest this happened with NZOA knowledge, only alleging the system established for programme funding does not preclude programme creators from siphoning off sizeable amounts of the funds they receive for programming to purchase new equipment for themselves.

Low power FM broadcasting in Australia, situated on five 'channels' between 87.600 and 88.0 MHz, has been given official permission to continue. Initially allowed for 12 month trial ending last December, new licenses have been granted to approximately 300 holders. The Australian Broadcasting Authority apparently plans to make low power radio a regular part of the licensing regime. Users vary from special parking advisories for large crowd events to foreign language services directed to tourists on the Gold Coast.

-JANUARY 1994 CONSUMER ELECTRONIC IMPORTS TO NEW ZEALAND-

	# Imported	Yr. to Date Avg. Cost	1993 Avg. Cost	Prior Month Avg. Cost	% of '93 Total Yr. To Date
CD PLAYERS	1,563	\$305.43	\$261.31		3.1%
VCRs	3,077	\$408.55	\$478.82		2.9%
CAM CORDERS	1,533	\$1091.80	\$1,224.96		6.7%
COLOUR TVs (all categories)	16,219	\$403.36	\$514.58		8.0%

BOLD FACE indicates prices UP from last year. % indicates Jan. imports versus all of '93; **8.3%** if equal to '93.

**WIDE
SCREEN
VIEW**



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- ☐ NEW ZEALAND'S SATELLITE TV REVOLUTION (issue 9312) / \$15 per copy
- ☐ VHF MANAGEMENT RIGHTS / TV COVERAGE DILEMMA (issue 9401) / \$15
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